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## The impact of audit committee characteristics on auditor remuneration: UK evidence

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**Abstract:** This study contributes to the literature through examining the impact of audit committee characteristics on auditor remuneration during the 2008–2010 period where widespread concerns were raised about the role of external auditors, and the crucial role that audit committees could play in safeguarding audit quality. The findings reveal that the external audit oversight role of audit committees has positive impact on enhancing audit quality through demanding wider audit scope from external auditors. However, non-audit fees are positively related to audit committee meetings, suggesting that the committee supports the simultaneous provision of audit services and non-audit services to facilitate a beneficial knowledge spill-over between the two services which in turn results in better audit quality. These findings imply that researchers would explore multi-theoretical approaches which could better explain organisational complexities and their environmental circumstances. Moreover, policy makers would consider the results while setting new corporate governance reform recommendations.

**Keywords:** audit committees; audit fees; auditor remuneration; financial crisis; non-audit fees; UK.

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## **1 Introduction**

The effectiveness of audit committees in contributing to governance has been a debatable issue since the time when firms started establishing audit committees. The effectiveness controversy was further fuelled by several corporate financial failures on the onset of the second millennium (e.g., Enron, WorldCom etc.), and lately by the 2008 global financial crisis. Specifically, in the post-financial crisis period between 2008 and 2010, regulators have put intense emphasis on the oversight roles of the board of directors in general and the audit committee in particular and intend to strengthen the role of audit committees and increase their responsibilities (Beattie et al., 2012).

This study is motivated by calls to enhance the effectiveness of audit committees in overseeing the external audit process in the period 2008–2010, where wide ranging concerns were raised about the quality of external auditing. Despite the fact that the sample ends in 2010, the research question, motivation of the paper and the results are still important. First, since the 2008 financial crisis, the Big Four audit firms have been continuously criticised of their role in several financial failures and scandals that have taken place in the UK. For instance, the Financial Reporting Council has criticised the Big Four audit firms for complacency and inaccurate and misleading reporting following a series of corporate failures and scandals such as BHS, Carillion and Thomas Cook that have taken place in the years 2016, 2018 and 2019 respectively. Concerns about the role of audit committees in monitoring auditor remuneration and independence were raised and were again fuelled by the large amount of fees earned by auditors prior to these failures. For instance, two of the Big Four audit firms (KPMG and Deloitte) earned £72m in fees from Carillion in the 10 years before the latter collapsed.

The 2008–2010 period has witnessed a significant increase in audit fees where distressed firms were charged large amount of fees by their Big Four external auditors (Sikka, 2009). Sikka (2009) sheds light on what he called the silence of auditors during the financial crisis where unqualified audit reports were issued to firms (by their Big Four auditors) just within a short period before the latter collapsed. He further argues that the auditor fee dependency “impairs claims of independence and has the capacity to silence auditors” (Sikka, 2009, p.872). External auditors (specifically the Big Four) were accused of complacency and ‘dereliction of duty’ (HOL, 2011), and were described as ‘not independent but are bloody-well paid’ (Sikka, 2009, p.871). However, audit committees are one of ‘the ultimate guardians of financial reporting’ (Ghosh et al., 2010) who are also expected to play a crucial role in the “remuneration of auditors, the content and extent of audit work, auditor independence, and the resolution of disputes between auditors and executive management” (Turley and Zaman, 2004, p.137). So where were the audit committees?

In the aftermath of the 2008 financial crisis and similar to what happened previously in other financial failures, researchers and commentators discuss and examine the question about the role of the external auditors and their remuneration during the crisis period. However, the question which has not been tackled yet is whether audit committee characteristics are really effective in determining the auditor's remuneration. As such, this study tests the hypotheses relating to the impact of audit committee characteristics on audit fees and non-audit service fees. Audit fees and non-audit fees are examined considering that they are one of the economic aspects of the relationship between external auditors and their clients. They have been tackled in the literature as surrogates for audit quality (e.g., O'sullivan, 2000; Ghafran and O'Sullivan, 2017; Sultana et al., 2019; Sitanggang et al., 2020) and auditor independence (e.g., Abbott et al., 2003, Hay et al., 2006, Ghosh et al., 2009) respectively. The first strand of research, which uses audit fees as proxy for audit quality, argues that higher audit fees are a signal for higher audit quality as the former would be charged as a result of increased audit effort by the auditor (see Simunic, 1980, Palmrose, 1986). The second strand of research views higher levels of non-audit fees in relation to audit fees as an indicator of higher economic bonding between the external auditor and the client which could adversely influence auditor independence (see Simunic, 1984, Abbott et al., 2003, Basioudis et al., 2008, Quick, 2012) and financial reporting quality (Shi et al., 2021). This study is focused on examining whether audit committees play an effective role in determining auditor remuneration. Following Zaman et al. (2011), we use ordinary least squares (OLS) models and incorporate the standardised residuals of the audit fees model into the non-audit fees model. The findings reveal that the external audit oversight role of audit committees have positive impact on enhancing audit quality through demanding wider audit scope from external auditors. However, non-audit fees are positively related to audit committee meetings, suggesting that the committee supports the simultaneous provision of audit services and non-audit services to facilitate a beneficial knowledge spill-over between the two services which in turn results in a better audit quality.

Despite regulators' and practitioners' intense emphases on the oversight roles of audit committees, post-Enron UK literature suffers from a lack of research on the association between audit committees and both audit fees and non-audit fees. The authors are not aware of any published study examining a similar relationship other than the studies conducted by Zaman et al. (2011) and Ghafran and O'Sullivan (2017). Zaman et al. (2011) investigate the impact of corporate governance on audit fees and non-audit fees in the period between 2001 and 2004. The sample of Zaman et al. (2011) accounts for only a period of one year after the major changes in the UK Corporate Governance Code which have taken place through the incorporation of the Smith and Higgs reports in 2003. On the other side, Ghafran and O'Sullivan (2017) examines the effect of audit committee accounting and non-accounting expertise on audit fees (as proxy for audit quality) that are paid by FTSE350 firms; however, their results are questionable as they did not investigate non-audit fees and account for their joint determination with audit fees. This study also contributes to the literature through defining audit committee expertise by those members with relevant financial experience as per the UK Corporate Governance Code. This measure was collected manually from annual reports as it is not available in governance databases.

Since the incorporation of the Smith and Higgs reports to the UK Corporate Governance Code in 2003, no major changes happened to the Code concerning audit

committee recommendations. This study investigates the impact of audit committee characteristics on auditor remuneration after the 2008 global financial crisis in the UK.

The remainder of the paper is organised as follows. Section 2 presents the background and the hypothesis development, followed by the research design in Section 3. Section 4 presents the empirical results. Finally, Section 5 concludes the study.

## **2 Background and hypotheses development**

### *2.1 Background*

In the post-financial crisis period between 2008 and 2010, auditors (particularly the Big Four) were put under fire for their performance in the financial crisis. Politicians' and commentators' arguments of 'low-balling' practices by audit firms have come up again after they first arose following the early 1990s recession and then the Enron-Andersen scandal<sup>1</sup> (ACCA, 2011). The House of Commons Treasury Committee (HCTC) published a report on 15 May 2009 expressing their concerns about auditor independence and arguing that "investor confidence, and trust in audit would be enhanced by a prohibition on audit firms conducting non-audit work for the same company, [and recommending] that the FRC consult on this proposal at the earliest opportunity" (HCTC, 2009, Section 2.1). The Auditing Practices Board (APB) of the FRC responded to the HCTC's recommendation by issuing a report in July 2010 on 'The Provision of Non-Audit Services by Auditors'. The report proposed an enhancement of the role of audit committees encouraging the latter to consider the level of non-audit services to be purchased, relative to audit fees, and to provide an explanation of the reasons for purchasing such services as well as of the external auditor's policy related to them. In the same vein, a report by the UK House of Lords followed to raise widespread concerns about the role of auditors during the crisis (HOL, 2011). The report accused the Big Four of complacency and 'dereliction of duty', emphasising the crucial role that audit committees could play in choosing auditors and maintaining their independence, and recommended restrictions on the auditors' provision of non-audit services to the FTSE 350 firms.

Similarly, the practitioners' focus on the crucial oversight role that audit committees could play in the audit process after the financial crisis was consistent with that of standard setters. In response to the HCTC request from the APB to consult on the prohibition on audit firms to provide non-audit services to their audit clients, the Institute of Chartered Accountants of Scotland issued a report in January 2010 recommending that the APB should rather take other actions than the complete prohibition of non-audit services (ICAS, 2010). Some of the major actions suggested by the report require the audit committee to publish the extent to which the provision of non-audit services by the external auditor will impair the latter's independence and "to pre-approve all non-audit services above a set fee level" or those which have an internal audit nature (p.8).

#### *2.1.1 Audit committee effectiveness, audit fees and non-audit fees*

The audit committee is considered as the most important board committee (Xie et al., 2003; Karim et al., 2016) and has extensive authority over a firm's sustainability reporting processes (Tumwebaze et al., 2021) as well as financial reporting and financial

accountability (Aldamen et al., 2018). According to the FRC (2012), audit committees provide their recommendations to the corporate board on how external auditors will be selected and compensated. For non-audit services that are not prohibited, regulators effectively made audit committees the ‘gatekeepers’ of external auditors’ independence, in fact as well as in appearance, through the preapproval of the latter services (Bédard and Paquette, 2021). The regulations and disclosure requirements concerning audit and non-audit fees, have elevated the expectations of audit committee members about their effectiveness, increased scrutiny of audit committees and their accountability to stockholders (Vera-Munoz, 2005; Gaynor et al., 2006). However, as a sub-committee of the board, the role of the audit committee may be controlled since the board has the right to review how the committee is settling its duties and handling the recommendations raised to it when any issues arise.

Effective audit committees assess and make recommendations on a firm’s financial as well as non-financial information (Tumwebaze et al., 2021) and ensure high integrated reporting quality (Raimo et al., 2021). Audit committees play an important role in determining the scope of audit and the compensation of external auditors (Walker, 2004). Specifically, they play a crucial role in appointing, retaining and removing the external auditor as well as in approving the remuneration and terms of engagement of the auditor (Walker, 2004, FRC, 2012). Moreover, the audit committee is responsible for monitoring the objectivity and independence of the external auditor and review the provision of non-audit services by the latter (Wu et al., 2016), identifying and recommending to the board on any matters which may arise (FRC, 2012, Ratzinger-Sakel and Schönberger, 2015). These roles are not just expected to reduce information asymmetry between managers and shareholders, but also to protect external auditors from fraud allegations through enhancing the auditor independence from management (Eisenhardt, 1989).

There is still no consensus in the literature on the direction of the relationship between corporate governance and audit fees (Hay et al., 2006; Nekhili et al., 2020; Sharma et al., 2021). Extant literature reveals two theoretical arguments behind this ambiguity in the relationship. The first argument is based on the agency theory and suggests that higher audit fees would result from the audit committee’s demand for greater audit efforts to ensure higher audit quality (Zaman et al., 2011). On the other hand, the second argument suggests that strong governance mechanisms are more likely to reduce risk thus leading to decrease in audit efforts and in turn audit fees (Zaman et al., 2011; Liu et al., 2021).

In the same vein, an important aspect of the oversight role that audit committees are expected to discharge is illustrated in monitoring the provision of non-audit services and the extent to which this provision will have a negative effect on auditor independence. Abbott et al. (2003) argue that at the time that non-audit services have a slight impact on the ability of the auditor to detect a material misstatement, these services are perceived to reduce “the auditor’s willingness to report a material misstatement” (Abbott et al., 2003, p.221). Several studies have supported this argument confirming that the provision of non-audit services by the incumbent auditor would impair auditors’ objectivity and compromise their independence (e.g., Firth, 1997, Hay et al., 2006, Ahadiat, 2011). They suggest that the simultaneous provision of audit services and non-audit services might create excessively high desires for auditors to maintain their clients and sustain lucrative income even if this is at the expense of compromising the auditors’ independence (Zaman et al., 2011). This is consistent with the agency perspective where the joint provision of audit services and non-audit services is expected to result in moral hazard agency

conflicts (Quick et al., 2013) and impair auditor independence (Habib, 2012). As such, the audit committee is the monitoring mechanism delegated by the board of directors to reduce these conflicts through reviewing the external auditors' supply of non-audit services and monitoring auditors' independence.

Regulatory recommendations about auditor independence are also consistent with the agency perspective and suggest that the audit committee is not only incentivised to limit non-audit services purchases, but also has the right to act as a stakeholder in the purchase decision (Abbott et al., 2003). Abbott et al. (2003) argue that the committee could either directly or indirectly affect the purchase of non-audit services. First, impairing the independence of auditors represents a direct reasonable reason for the audit committee to influence the purchase of non-audit services decisions. Alternatively, an indirect effect suggests that management would respond to an effective and vigilant audit committee by voluntarily limiting the purchase of non-audit services.

## *2.2 Hypotheses development*

Certain audit committee characteristics like independence, financial expertise, size and meetings (e.g., Carcello et al., 2002, Lee and Mande, 2005, Zaman et al., 2011, Rustam et al., 2013) are crucial for the committee's monitoring effectiveness and are used by scholars to examine the effect of audit committees on audit fees and non-audit service fees. Audit committees with different levels of expertise, independence, and diligence will likely differ in their monitoring activities and decisions and will therefore have different effects on internal audit oversight (Vadasi et al., 2021) as well as external audit quality (Karim et al., 2016).

### *2.2.1 Audit committee independence*

Watts and Zimmerman (1983) theorise that the conduction of an audit by someone who is independent of management (the external auditor) tends to reduce agency conflicts that result from the divergence of interests between managers and shareholders. The agency theory posits that audit committees that have a higher percentage of independent directors are more effective as independent members have the incentives to improve the transparency of financial information that is disclosed to stockholders (O'Sullivan, 2000; Klein, 2002; Krishnan, 2005). Such committees are more capable of monitoring the audit process and of preserving the independence of external auditors through requiring a wider audit scope and controlling the purchase of non-audit services from the auditor (Abbott et al., 2003; Zaman et al., 2011; Wu et al., 2016). In doing so, the independent committee directors maintain a good reputation as effectual decision controllers (Abbott et al., 2003). Corporate governance officials particularly emphasise audit committee independence (Cadbury, 1992; Smith Report, 2003; Ghafran and O'Sullivan, 2012) and the UK Corporate Governance Code (2012) recommends that an audit committee should include at least three independent directors. Independent directors do not have personal relations with managers or economic interests and are thus expected to exercise better monitoring skills (Fama and Jensen, 1983). Empirical evidence from different contexts supports this argument. For instance, Hope et al. (2012) find that shareholders have more agency conflicts with CEOs than with independent directors. Moreover, Wu et al. (2016) show that the percentage of independent audit committee directors is positively associated with the probability of an auditor going-concern modification for UK firms

which got delisted between 1997 and 2011. In addition, factors which may reduce audit committee independence like economic incentives of audit committee members (Carcello and Neal, 2003; Bédard et al., 2004) were shown to weaken the committee's oversight quality. Lin (2018) finds that incentive-based compensation of audit committee members is associated with lower accruals quality and higher abnormal audit fees when firms switch from a Big 4 auditor to non-Big 4 auditor. Moreover, Liu et al. (2021) finds a negative association between equity compensation of audit committee members and audit fees, suggesting that larger equity pay induces audit committee members to forgo independence, lowering audit fees and, in turn, reducing earnings quality. Concerning non-audit fees, evidence from the non-audit fees literature reveals a negative association between non-audit service fees and audit committee independence (Abbott et al., 2003, Zaman et al., 2011). Independent directors tend to be more concerned about the impairment of auditor independence and its effect on audit quality, than are executives (Zaman et al., 2011). Such directors have interests to serve in the decision control and protect audit quality in order to enhance their reputational capital as experts (Abbott et al., 2003). Wu et al. (2016) tested the possibility that the threat caused by non-audit services to auditor reporting quality is affected by the extent of audit committee independence. Their results suggested that in the presence of more independent audit committees, auditors offering the client non-audit services are less expected to issue an unmodified going-concern report before a corporate failure. The latter findings suggest that audit committee characteristics are of significant importance in relation to auditor reporting quality and to a firm's decisions on buying non-audit services. Unlike executive directors, independent directors are more likely to ensure higher audit quality through exercising more power on management and demanding a wider audit scope (i.e., higher audit fees) (Zaman et al., 2011), as well as through limiting the purchase of non-audit services from the incumbent auditor<sup>2</sup> (Abbott et al., 2003, Zaman et al., 2011). As such this study hypothesises that:

*Hypothesis 1<sub>a</sub>: There is a positive relationship between audit committee independence and audit fees.*

*Hypothesis 1<sub>b</sub>: There is a negative relationship between audit committee independence and non-audit service fees.*

### *2.2.2 Audit committee relevant financial experience*

“The effectiveness of audit committees is affected, first and foremost, by the expertise of members of audit committees in the areas of accounting and financial reporting, internal controls and auditing” (POB, 1994, p.15). DeZoort and Salterio (2001) suggested that audit committee members with different skills and knowledge bases may have different judgements and relationships with auditors. While some researchers highlight the importance of audit committee legal expertise (Krishnan et al., 2011) and industry expertise (Bédard and Gendron, 2010; Cohen et al., 2014; Alhababsah and Yekini, 2021) in improving audit quality, regulatory recommendations on audit committee financial expertise highlight the importance of the possession of two types of knowledge by audit committee members. ‘Financial reporting knowledge’ which enables the committee members to understand and analyse accounting figures in the financial reports, and ‘audit reporting knowledge’ which will help the committee members to have a better understanding of the purpose and nature of the audit (DeZoort and Salterio, 2001). The



UK Corporate Governance Code recommends that a firm's audit committee should include at least one member with recent and relevant financial experience. This recommendation is consistent with the agency theory which suggests that an audit committee comprising of financially knowledgeable members is more able to understand and monitor management accounting judgements and the overall financial reporting process thus leading to reduction in information asymmetry. Members with relevant financial expertise are expected to understand external auditors' judgements and deal with higher levels of accounting sophistication in organisations (Defond et al., 2005). In line with the latter arguments, recent studies show that audit committees with greater financial expertise are linked to higher financial reporting quality (Safari Gerayli et al., 2021) and higher audit quality signified by higher audit fees (Ghafran and O'Sullivan, 2017). In addition, Sulaiman (2017) suggests that the effectiveness of audit committee oversight role relating to audit quality greatly depends on the presence of financial experts on the committee and its ability to create and maintain a dynamic relation with the external auditor. Moreover, Wu et al. (2016) showed that failed UK companies with a higher fraction of financial experts on their audit committees are more expected to receive going-concern modifications before failure. They also showed that in the presence of audit committee financial experts, auditors which offer non-audit services for the firm are less expected to issue an unmodified going-concern before firm failure. More recently, Sawani (2021) argue that the expertise of the audit committee chair is important for promoting audit quality. The author compared the effect of audit committee chair expertise on auditor dismissal for US firms which received a first-time going concern and firms that received a clean opinion during the period 2008–2016. The results showed that audit committees with chairs that have audit, governance, industry and financial expertise, are negatively related to auditor dismissal. Moreover, Hillebrandt and Ratzinger-Sakel (2021) show that task-related experience as well as firm-specific knowledge of audit committee chairs affect audit quality and audit fees only when these chairs also have accounting expertise. Using data from Greek listed firms, Drogalas et al. (2021) show that audit committees which have more members with previous audit experience are less likely to permit a disproportionate provision of non-audit services relative to total fees. Furthermore, using data from US firms, Bédard and Paquette (2021) show that tax non-audit services are substantially lower when the audit committee has accounting financial experts, indicating that members with financial expertise are more sensitive to the threats to auditor independence than other committee members. As such, this study argues that audit committee members with relevant financial experience are more likely to obtain better understanding of management accounting judgements and discretions and often ensure a higher audit quality through demanding a broader audit scope thus leading to higher audit fees. On the other side, as these members are more knowledgeable about the system's deficiencies, they are more likely to discourage managers from seeking non-audit services (Zaman et al., 2011). Therefore, this study hypothesises that:

*Hypothesis 2<sub>a</sub>: There is a positive relationship between audit committee relevant financial experience and audit fees.*

*Hypothesis 2<sub>b</sub>: There is a negative relationship between audit committee relevant financial experience and non-audit service fees.*

### 2.2.3 *Audit committee size*

It has been argued that the increase in group size tend to adversely affect the group's effectiveness because of process and coordination problems (Eisenberg et al., 1998). This argument, however, is less valid in small groups where the addition of members is expected to enhance the group effectiveness as there will be more people to draw on. The UK Corporate Governance Code recommends that the number of directors on the audit committee should be at least three, or two in the case of smaller companies (FRC, 2012 C.3.1). This is consistent with several studies which have noted that an ideal audit committee size would be between three and four directors (e.g., Xie et al., 2003, Vafeas, 2005). Based on resource dependency theory, the presence of more directors on the audit committee is likely to improve the committee's effectiveness since there will be more opinions to draw on. The improved oversight role of the audit committee, in turn, would result in greater audit efforts and thus higher audit fees. Moreover, in line with the resource dependency theory, Zaman et al. (2011) suggested that larger committees are better watchers of management activities as they are armed with more resources that enable them to discern significant problems (Rahmat et al., 2009). In addition, their large size increases their power within the firm and allows them to request more extensive audits by external auditors (DeZoort et al., 2002; Turley and Zaman 2004; Zaman et al., 2011). This study suggests that larger audit committees are better observers of management actions. They are equipped with more resources which enable them to discern substantial problems and improve their oversight quality (Zaman et al., 2011). The large size of audit committees helps them enhance their power within organisations and demand a higher audit quality (Zaman et al., 2011), where more substantive audits are performed, and higher audit fees are charged. At the same time, the higher level of knowledge found in larger audit committees is more likely to compensate for the need to purchase non-audit services to resolve problems. As such this study hypothesises that:

*Hypothesis 3<sub>a</sub>: There is a positive relationship between audit committee size and audit fees.*

*Hypothesis 3<sub>b</sub>: There is a negative relationship between audit committee size and non-audit service fees.*

### 2.2.4 *Audit committee meetings*

Diligent audit committees tend to be proactive in discharging their oversight role (Abbott et al., 2003), and effective monitors over the audit process (Zaman et al., 2011). The number of audit committee meetings was used as an indicative measure of the committee's diligence (Menon and Williams, 1994; Al-Okaily, 2020). A large and growing body of literature has supported this argument and has investigated meeting frequency as a determinant of audit and non-audit service fees (e.g., Lee and Mande, 2005; Krishnan and Visvanathan, 2009; Ittonen et al., 2010; Rustam et al., 2013). Lee and Mande (2005) investigate the association between audit committee characteristics (meeting frequency, independence and expertise) on the one hand and audit fees and non-audit fees on the other for a sample of 780 US firms in the year 2000. They find that audit committee meetings are significantly and positively related to audit fees. With respect to non-audit fees, however, they find a negative association with audit committee meetings only under the single equation regression. As such they conclude that this

finding is spurious as its estimation does not consider the simultaneity of fees. Krishnan and Visvanathan (2009) use the US context and examine the impact of audit committee and board characteristics on audit fees for a sample of 807 firms listed in the S&P 500 during the years 2000 to 2002. Their results are consistent with the demand-side perspective where they find a positive association between audit committee meetings and audit fees. Providing evidence from Pakistan, Rustam et al. (2013) use a panel data technique and investigate the relationship between audit committee characteristics and audit fees. They find that audit committee meetings is positively related to audit fees and conclude that auditors tend to charge higher fees to compensate for the extra time spent on preparing and attending meetings with the audit committee.

Active audit committees with frequent meetings are more effective in monitoring the audit process and urging the external auditors to increase their audit testing (Krishnan and Visvanathan, 2009). They are more likely to limit the purchase of non-audit services from the incumbent auditor (Abbott et al., 2003). Empirically, audit committees with frequent meetings are found to be positively related to audit fees (e.g., Lee and Mande, 2005, Krishnan and Visvanathan, 2009, Zaman et al., 2011, Rustam et al., 2013). Evidence on non-audit service fees, however, does not reveal a consensus on the relationship with audit committee meetings. This study argues that an audit committee which meets more frequently tends to vigilantly oversee the financial reporting process requiring the auditor to perform a wider audit scope and consequently higher audit fees are charged as a result of more audit efforts exerted by the external auditor.

On the other side, this will lead to lower non-audit fees due to less purchases of non-audit services by management (Abbott et al., 2003, Turley and Zaman, 2004, Zaman et al., 2011). As such this study hypothesises that:

*Hypothesis 4<sub>a</sub>: There is a positive relationship between audit committee meetings and audit fees.*

*Hypothesis 4<sub>b</sub>: There is a negative relationship between audit committee meetings and non-audit service fees.*

### **3 Research design**

#### *3.1 Sample selection and data sources*

The initial sample consists of all FTSE 350 companies listed in the London Stock Exchange (LSE), for the three-year period between 2008 and 2010. Using a sample period between 2008 and 2010 the authors attempt to address regulatory concerns about firms having ineffective external audit processes. During the 2008 to 2010 period, the UK House of Lords criticises the role of Britain's Big 4 auditors during the global financial crisis and recommended restrictions on the auditors' provision of non-audit services to the FTSE 350 firms and an enhanced role for audit committees to monitor the auditor-management relationship aspects, one of which is auditor remuneration. The previously discussed calls to restrict auditors from providing non-audit services to FTSE 350 firms and to enhance the role of the audit committees of these firms make FTSE 350 the ideal sample to examine.<sup>3</sup>

The corporate governance data was collected manually from annual reports. Financial and accounting data was obtained from DataStream. Firms in the insurance, financial and utilities industries are excluded because they differ from other industries in terms of their regulatory environment (Zaman et al., 2011) and characteristics. Moreover, financial and utility institutions are characterised by relatively large assets, but they entail less audit effort and testing than firms with extensive receivables and inventory (Hay et al., 2006).

The final sample consists of 619 observations. Panel A and Panel B in Table 1 present the sample selection procedures and the distribution of sample firms by industry and year respectively. The majority of firms are from the industrials and consumer services industries representing about 58% of the total sample.

**Table 1** Sample selection and distribution by industry and year

<i>Panel A: Sample selection procedures</i>					
	2008	2009	2010	<i>Total Sample</i>	
Total firms in FTSE 350 at year end	358	355	356	<b>1069</b>	
Companies in financial & insurance industries (ICB 8000)	-113	-112	-116	<b>-341</b>	
Companies in utilities industry (ICB 7000)	-10	-9	-9	<b>-28</b>	
Companies with missing corporate governance and financial values	-29	-21	-31	<b>-81</b>	
<b>Total sample</b>	<b>206</b>	<b>213</b>	<b>200</b>	<b>619</b>	
<i>Panel B: Distribution of sample firms by industry and year</i>					
<i>ICB code</i>	<i>Industry</i>	2008	2009	2010	<i>Total sample</i>
0001	Oil and Gas	15	18	15	48
1000	Basic materials	20	20	21	61
2000	Industrials	67	66	60	193
3000	Consumer goods	24	27	24	75
4000	Healthcare	8	9	8	25
5000	Consumer services	60	55	53	168
6000	Telecommunications	3	4	4	11
9000	Technology	9	14	15	38
<b>Total sample</b>		<b>206</b>	<b>213</b>	<b>200</b>	<b>619</b>

### 3.2 *Measurement of the control variables*

Consistent with prior studies on audit fees and non-audit service fees, this study uses several firm-specific control variables to account for complexity, size, profitability, leverage, form of ownership and industry (e.g., Carcello et al., 2002, Abbott et al., 2003, Clatworthy and Peel, 2007, Zaman et al., 2011). It intends to control for necessary variables from each of these categories while avoiding 'kitchen sink' models which comprise 'more control variables than necessary' (Hay, 2013, p.167). These variables are as follows:

- *Block-holders (BLOCK)*: Block-holders have higher economic incentives for monitoring than minor shareholders, because their potential benefits outweigh the monitoring costs (Quick et al., 2013). As such, block-holders tend to demand a higher quality audit which is achieved through higher audit fees, and through reduction in the purchase of non-audit services to protect auditors' independence.
- *Mergers and acquisition (ACQ)*: Firms involved in merger and acquisition activities are associated with higher audit fees and higher non-audit service fees. Higher audit fees might result from the increased efforts of the external auditor to deal with internal control problems which might occur as a result of these activities (Zaman et al., 2011). On the other hand, such activities create the demand for the purchase of non-audit services by the relevant firms (Firth, 1997).
- *Number of business segments (BUSSEG)*: Firms with a larger number of business segments are relatively more complex and therefore require higher audit efforts and higher levels of non-audit services.
- *Loss in either or both of previous two years (LOSS)*: In case of poor performance, the auditor is exposed to more risk and consequently charges higher audit fees (Hay et al., 2006). On the other hand, firms with poor performance tend to demand more consulting non-audit services to improve profitability (Firth, 1997, Abbott et al., 2003).
- *Leverage (LEV)*: leverage is expected to increase agency costs thus leading to an increase in audit fees and a decrease in non-audit service fees (Abbott et al., 2003).
- *Firm size (SIZE)*: "is the most important determinant of audit fees" (Bigus, 2015, p.371). Large firms are required to meet higher levels of regulatory recommendations and requirements. They require higher audit quality which could be achieved by increased audit efforts and therefore higher audit fees (Zaman et al., 2011; Shan and Troshani, 2016). On the other hand, large firms tend also to purchase higher levels of non-audit services to deal with their system complexities and wider range of activities (Abbott et al., 2003, Zaman et al., 2011) thus leading to higher non-audit service fees.
- *Industry (INDY)*: The difficulty of an audit differs from one industry to another (Simunic, 1980, Hay et al., 2006). For instance, industries characterised by extensive receivables and inventory are relatively harder to audit than others (Hay et al., 2006). Therefore, such industries require more efforts and testing from the auditor leading the latter to charge higher fees. On the other hand, these industries tend to purchase higher levels of non-audit services to help them deal with difficulties and problems.

### 3.3 Models specification

*Model 1*: the impact of audit committee and board characteristics on audit fees

$$\begin{aligned} \text{LnASF} = & \beta_0 + \beta_1 \text{ACM} + \beta_2 \text{ACS} + \beta_3 \text{ACI} + \beta_4 \text{ACRX} + \beta_5 \text{BLOCK} + \beta_6 \text{ACQ} \\ & + \beta_7 \text{BUSSEG} + \beta_8 \text{LOSS} + \beta_9 \text{LEV} + \beta_{10} \text{SIZE} + \beta_{11} \text{INDY} + \beta_{12} T \quad (1) \end{aligned}$$

*Model 2: the impact of audit committee and board characteristics on non-audit fees*

$$\begin{aligned} \text{LnNASF} = & \beta_0 + \beta_1 \text{ACM} + \beta_2 \text{ACS} + \beta_3 \text{ACI} + \beta_4 \text{ACRX} + \beta_5 \text{BLOCK} + \beta_6 \text{ACQ} \\ & + \beta_7 \text{BUSSEG} + \beta_8 \text{LOSS} + \beta_9 \text{LEV} + \beta_{10} \text{SISE} + \beta_{11} \text{INDY} \\ & + \beta_{12} T + \varepsilon_{ml} \end{aligned} \quad (2)$$

where:

*Dependent variables*

LnASF: Natural logarithm of audit service fees

LnNASF: Natural logarithm of Non-audit service fees

*Independent variables*

*ACM*: Number of audit committee meetings held in a given year.

*ACS*: Total number of audit committee members.

*ACI*: The percentage of independent directors on the audit committee.

*ACRX*: The percentage of audit committee directors with relevant financial expertise on the audit committee.

*BLOCK*: Percentage ownership of block-holders who hold at least 5% or more of outstanding common shares and are unaffiliated with management.

*ACQ*: Indicator variable with a value of one if a firm made an acquisition in either one or both of the previous two years.

*BUSSEG*: Number of a firm's business segments

*LOSS*: Indicator variable with a value of one if a firm incurred losses in either one or both of the previous two years.

*LEV*: Total long-term debt to total assets.

*SIZE*: Natural logarithm of total assets at year end.

*INDY*: Type of industry. Indicator variable of one for each of the following industry types: Oil and Gas, Basic Materials, Industrials, Consumer Goods, Health Care, Consumer Services, Telecommunications, Technology.

*T*: Time. Indicator variables of one for each of the following years: 2008, 2009 and 2010.

$\varepsilon_{ml}$ : Error term of model one.

## 4 Empirical results

### 4.1 Descriptive statistics

Table 2 provides the descriptive statistics for the dependent variables (audit fees and non-audit fees), corporate governance variables and control variables. The mean (median) of audit fees and non-audit fees for 619 observations for the period from 2008 to 2010 are

£2.137 million (£0.800 million) and £1.354 million (£0.495 million) respectively. The average audit committee contains four directors and meets four times a year. Only 9.3% of the audit committee members are considered non-independent and 32.1% have relevant financial expertise. These statistics reveal that, on average, sample firms comply with the recommendations of the UK Corporate Governance Code in terms of audit committee size, number of meetings and financial expertise. Some firms, however, fell short of meeting the recommendation of having solely independent directors in their audit committees. Block-holders who are unaffiliated with management own 27.8% of the stock. On average, sample firms are found to have three business segments and 64.5% of the firms have made acquisitions during the sample period. Finally, the mean (median) of the total assets of this study's sample firms are 7,294,121,000 (1,590,572,000).

Table 3 reports the Spearman and Pearson correlations among the dependent and independent variables (excluding industry dummies). Both Spearman and Pearson correlations indicate a positive significant correlation between  $\ln\text{ASF}$  and  $\ln\text{NASF}$  (Spearman 0.68, Pearson 0.48). This suggests that sample firms purchase both audit and non-audit services from the incumbent auditor at the same time. All audit committee variables are found to be significantly correlated with both  $\ln\text{ASF}$  and  $\ln\text{NASF}$  under the Spearman correlation. Unexpectedly, audit committee variables that are correlated with  $\ln\text{NASF}$  have positive coefficients, suggesting that good governance mechanisms tend to demand the purchase of greater levels of non-audit services. Moreover,  $\text{ACRX}$  is found to be negatively correlated with  $\ln\text{ASF}$ . This implies that the presence of audit committee members with relevant financial experience is expected to reduce the audit efforts of auditors and therefore reduce audit fees. Finally, correlations among the independent variables do not reveal any multicollinearity problem. The highest correlation of 0.39 is between  $\text{SIZE}$  and  $\text{ACM}$ .

#### *4.2 Multivariate analyses*

This section presents a multivariate analysis of the impact of audit committee characteristics on audit fees and non-audit fees. Extant literature has shown that audit fees and non-audit fees are jointly determined (Whisenant et al., 2003, Lee and Mande, 2005) and examining them in single equation models may lead to biased results. Moreover, Zaman et al. (2011) recently account for what they called this 'complex' relationship between audit fees and non-audit fees as well as the other explanatory variables through using OLS models and incorporating the standardised residuals of the audit fees model into the non-audit fees model. As such, we test our hypotheses using both Zaman et al. (2011) approach and the simultaneous equation approach.

Tables 4 and 5 report the results from the audit fees and non-audit fees models respectively. In each of these tables, the authors present four regression results. Regressions 1 report the OLS results with the incorporation of the standardised residuals of the audit fees model into the non-audit fees model. Regressions 2 report the results estimated using two-stage least squares (2SLS) estimator. Regressions 3 and 4 are the same as regressions 1 except for the fact that they present the results for the sample firms divided into larger and smaller firms respectively.

**Table 2** Descriptive statistics

	Number	Mean	Standard deviation	Median	Minimum	Maximum
<i>Dependent variables</i>						
<i>ASF</i> (£'000)	619	2,137,844.00	4,165,314.00	800,000.00	23,000.00	37,400,000.00
<i>LnASF</i>	619	13.717	1.26	13.592	10.043	17.437
<i>NASF</i> (£'000)	619	1,354,121.00	3,993,373.00	495,375.30	0	73,700,000.00
<i>LnNASF</i>	619	12.727	2.573	13.113	0	18.116
<i>Audit Committee Characteristics</i>						
<i>ACM</i>	619	4.134	1.524	4	2	15
<i>ACS</i>	619	3.62	0.901	3	2	7
<i>ACI</i>	619	0.907	0.171	1	0	1
<i>ACRX</i>	619	0.321	0.271	0.333	0	1
<i>Control variables</i>						
<i>BLOCK</i>	619	0.278	0.185	0.248	0	0.924
<i>LEV</i>	619	0.196	0.164	0.174	0	0.807
<i>TA</i> (£'000)	619	7,294,121.00	21,500,000.00	1,590,572.00	44,068.00	203,000,000.00
<i>SIZE</i>	619	14.416	1.51	14.28	10.693	19.13
<i>LOSS</i>	619	0.158	0.365	0	0	1
<i>ACQ</i>	619	0.645	0.479	1	0	1
<i>BUSSEG</i>	619	3.197	1.941	3	1	10

*ASF* are audit service fees in £; *LnASF* is the natural logarithm of *ASF*; *NASF* are non-audit service fees in £; *LnNASF* is the natural logarithm of *NASF*; *ACM* is the number of audit committee meetings held in a given year; *ACS* is the total number of audit committee members; *ACI* is the percentage of independent directors in the audit committee; *ACRX* is the percentage of audit committee directors with relevant financial expertise on the audit committee; *BLOCK* is the percentage ownership of block-holders who hold at least 5% or more of outstanding common shares and are unaffiliated with management; *LEV* is total long-term debt to total assets; *TA* is total assets at yearend; *SIZE* is the natural logarithm of total assets at yearend; *LOSS* is an indicator variable with 1 if a firm incurred losses in either one or both of the previous two years; *ACQ* is an indicator variable with a value of 1 if a firm made an acquisition during the year; *BUSSEG* is the number of a firm business segments.



**Table 3** Spearman (Lower Triangle) and Pearson (Upper Triangle) correlations

Variables	<i>lnASF</i>	<i>lnNASF</i>	<i>ACM</i>	<i>ACS</i>	<i>ACI</i>	<i>ACRX</i>	<i>BLOCK</i>	<i>LEV</i>	<i>SIZE</i>	<i>LOSS</i>	<i>ACQ</i>	<i>BUSSEG</i>
<i>lnASF</i>	1	<b>0.48</b>	<b>0.43</b>	<b>0.38</b>	<b>0.15</b>	<b>-0.08</b>	<b>-0.25</b>	0.04	<b>0.76</b>	<b>-0.1</b>	<b>0.32</b>	<b>0.37</b>
<i>lnNASF</i>	<b>0.68</b>	1	<b>0.24</b>	<b>0.22</b>	0.05	-0.04	<b>-0.15</b>	-0.01	<b>0.39</b>	<b>-0.12</b>	<b>0.23</b>	<b>0.19</b>
<i>ACM</i>	<b>0.4</b>	<b>0.31</b>	1	<b>0.26</b>	<b>0.07</b>	-0.07	-0.04	-0.02	<b>0.39</b>	-0.02	0.03	<b>0.13</b>
<i>ACS</i>	<b>0.35</b>	<b>0.29</b>	<b>0.27</b>	1	0	<b>-0.23</b>	<b>-0.19</b>	<b>0.07</b>	<b>0.38</b>	-0.05	<b>0.14</b>	0.05
<i>ACI</i>	<b>0.11</b>	<b>0.11</b>	<b>0.09</b>	-0.03	1	0.03	<b>-0.09</b>	-0.03	<b>0.11</b>	0	0.06	-0.03
<i>ACRX</i>	<b>-0.16</b>	<b>-0.11</b>	<b>-0.09</b>	<b>-0.38</b>	<b>0.07</b>	1	-0.05	0.01	-0.04	0.02	<b>-0.08</b>	0.03
<i>BLOCK</i>	<b>-0.28</b>	<b>-0.23</b>	<b>-0.07</b>	<b>-0.18</b>	-0.05	-0.01	1	<b>-0.07</b>	<b>-0.25</b>	<b>0.14</b>	<b>-0.12</b>	-0.02
<i>LEV</i>	<b>0.11</b>	<b>0.15</b>	0.02	0.06	-0.05	-0.05	<b>-0.09</b>	1	<b>0.22</b>	0.01	0.06	<b>0.1</b>
<i>SIZE</i>	<b>0.71</b>	<b>0.59</b>	<b>0.37</b>	<b>0.34</b>	<b>0.1</b>	<b>-0.1</b>	<b>-0.28</b>	<b>0.32</b>	1	-0.03	<b>0.18</b>	<b>0.28</b>
<i>LOSS</i>	<b>-0.08</b>	-0.04	0.02	-0.04	-0.01	0	<b>0.15</b>	0.01	-0.02	1	<b>-0.13</b>	0
<i>ACQ</i>	<b>0.34</b>	<b>0.25</b>	0.04	<b>0.13</b>	0.05	<b>-0.1</b>	<b>-0.14</b>	<b>0.1</b>	<b>0.19</b>	<b>-0.13</b>	1	0.3
<i>BUSSEG</i>	<b>0.38</b>	<b>0.27</b>	<b>0.14</b>	0.03	-0.02	0.01	<b>-0.1</b>	<b>0.13</b>	<b>0.28</b>	-0.01	<b>0.33</b>	1

*lnASF* is the natural logarithm of audit service fees; *lnNASF* is the natural logarithm of non-audit service fees; *ACM* is the number of audit committee meetings held in a given year; *ACS* is the total number of audit committee members; *ACI* is the percentage of independent directors in the audit committee; *ACRX* is the percentage of audit committee directors with relevant financial expertise on the audit committee; *BLOCK* is the percentage ownership of block-holders who hold at least 5% or more of outstanding common shares and are unaffiliated with management; *LEV* is total long-term debt to total assets; *SIZE* is the natural logarithm of total assets at yearend; *LOSS* is an indicator variable with 1 if a firm incurred losses in either one or both of the previous two years; *ACQ* is an indicator variable with a value of 1 if a firm made an acquisition during the year; *BUSSEG* is the number of a firm business segments.

Bolded coefficients are statistically significant at 10% level.

**Table 4** OLS with robust standard errors (Dep.: Nat. Log. of Audit Fees)

<i>Variables</i>	<i>Reg. 1(OLS)</i>	<i>Reg. 2(2SLS)</i>	<i>Reg. 3(Large Firms)</i>	<i>Reg. 4(Small Firms)</i>
	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>
<i>INERCEPT</i>	<b>4.131***</b> (11.14)	<b>4.563**</b> (2.85)	<b>3.915***</b> (4.57)	<b>2.918*</b> (1.84)
<i>lnNASF</i>		-0.0876 (-0.22)		
<i>ACM</i>	<b>0.090***</b> (4.45)	<b>0.102*</b> (1.67)	<b>0.0670***</b> (2.57)	<b>0.115***</b> (3.47)
<i>ACS</i>	<b>0.112***</b> (3.42)	<b>0.125*</b> (1.73)	<b>0.131***</b> (3.06)	0.033 (0.55)
<i>ACI</i>	<b>0.382**</b> (2.28)	<b>0.378**</b> (2.04)	0.186 (0.65)	<b>0.466**</b> (2.11)
<i>ACRX</i>	-0.06 (-0.53)	-0.055 (-0.45)	-0.142 (-0.89)	-0.028 (-0.17)
<i>BLOCK</i>	-0.134 (-0.69)	-0.162 (-0.73)	-0.164 (-0.62)	0.231 (0.81)
<i>LEV</i>	<b>-0.903***</b> (-4.65)	<b>-1.032*</b> (-1.64)	<b>-0.880***</b> (-3.05)	<b>-0.726***</b> (-2.65)
<i>SIZE</i>	<b>0.587***</b> (23.17)	<b>0.636***</b> (2.82)	<b>0.631***</b> (13.83)	<b>0.560***</b> (9.08)
<i>LOSS</i>	<b>-0.158*</b> (-1.71)	-0.206 (-0.87)	0.0534 (0.45)	<b>-0.330**</b> (-2.29)
<i>ACQ</i>	<b>0.206***</b> (2.96)	0.263 (0.97)	<b>0.352***</b> (3.36)	0.079 (0.83)
<i>BUSSEG</i>	<b>0.100***</b> (6.40)	<b>0.107***</b> (2.71)	<b>0.125***</b> (6.05)	<b>0.085**</b> (3.19)
<i>O&amp;G</i>	<b>-0.401***</b> (-3.22)	<b>-0.426*</b> (-1.91)	<b>-0.686***</b> (-3.00)	1.205 (0.89)
<i>BMAT</i>	<b>-0.528***</b> (-3.36)	<b>-0.591*</b> (-1.71)	<b>-1.056***</b> (-4.13)	1.350 (1.00)
<i>INDST</i>	0.046 (0.48)	0.0275 (0.15)	-0.336 (-1.53)	1.777 (1.33)
<i>CGOD</i>	<b>-0.416***</b> (-3.20)	<b>-0.425**</b> (-2.31)	<b>-0.622**</b> (-2.45)	1.024 (0.76)
<i>HCAR</i>			-0.304 (-1.28)	1.559 (1.16)
<i>CSEV</i>	<b>-0.425***</b> (-4.23)	<b>-0.469*</b> (-1.80)	<b>-0.853***</b> (-3.95)	1.395 (1.04)

**Table 4** OLS with robust standard errors (Dep.: Nat. Log. of Audit Fees) (continued)

Variables	Reg. 1(OLS)	Reg. 2(2SLS)	Reg. 3(Large Firms)	Reg. 4(Small Firms)
	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)	Coeff. (t-stat)
TELECOM	<b>-0.469**</b> (-2.23)	-0.575 (-1.02)	<b>-0.764***</b> (-2.62)	
TECH	0.02 (0.14)	-0.021 (-0.08)		1.566 (1.16)
2008	0.095 (1.3)			0.059 (0.55)
2009	0.045 (0.66)	-0.072 (-0.57)	-0.052 (-0.52)	0.014 (0.15)
2010		-0.111 (-1.02)	-0.105 (-1.04)	
R-square	70.99%	64.77%	66.5%	47.02%
Observations	619	619	310	309

\*, \*\*, \*\*\*significant at the 1%, 5%, and 10% level or better, respectively.

ACM is the number of audit committee meetings held in a given year; ACS is the total number of audit committee members; ACI is the percentage of independent directors in the audit committee; ACRX is the percentage of audit committee directors with relevant financial expertise on the audit committee; BLOCK is the percentage ownership of block-holders who hold at least 5 % or more of outstanding common shares and are unaffiliated with management; LEV is total long-term debt to total assets; SIZE is the natural logarithm of total assets at yearend; LOSS is an indicator variable with 1 if a firm incurred losses in either one or both of the previous two years; ACQ is an indicator variable with a value of 1 if a firm made an acquisition during the year; BUSSEG is the number of a firm business segments; O&G is oil and gas industry; BMAT is basic materials industry; INDST is industrials industry; CGOD is consumer goods industry; HCAR is healthcare industry; CSEV is consumer services industry; TELECOM is telecommunications industry; TECH is technology industry.

#### 4.2.1 Audit fees

As predicted in hypotheses 1a, 3a, and 4a, Regression 1 in Table 4 reveals that ACI, ACS and ACM are significant and positively related to audit fees, suggesting that higher audit fees are associated with larger audit committees (Boo and Sharma, 2008, Zaman et al., 2011) that are independent (Lee and Mande, 2005, Zaman et al., 2011, Rustam et al., 2013) and meet more frequently (Lee and Mande, 2005, Zaman et al., 2011). All main control variables except BLOCK are significantly related to audit fees. ACQ, SIZE and BUSSEG are found to have a positive impact on audit fees suggesting that larger firms that engage in acquisition activities and have a larger number of business segments require greater audit efforts from the external auditor leading the latter to charge higher audit fees. LEV is found to be negatively related to audit fees. This finding suggests that debt will increase the monitoring activities by the financial market and other outside parties where less audit efforts will be required (Alves, 2021). Moreover, despite that this finding contradicts with the authors’ prediction of a positive sign, it is consistent with a

finding of a UK study conducted by Zaman et al. (2011) on a sample of 540 FTSE firms listed during the period 2001 to 2004. Audit fees in the basic materials, consumer goods, consumer services and telecommunications industries are found to be relatively less than those in the healthcare one. This finding is driven by the large companies in our sample as these variables are insignificant in small companies. Moreover, this finding is consistent with the results of the 2012 Statutory Audit Services Market Investigation report which shows that the healthcare industry is charged the highest audit fees per hour among our sample industries.

Running the regression using 2SLS estimator (Regression 2) reveals qualitatively the same results as Regression 1 confirming the positive and significant association between audit fees on the one hand and ACM, ACS and ACI on the other. However, the significant impact of LOSS and ACQ on audit fees does not hold.

#### *4.2.2 Non-audit fees*

Using the full sample, the results of regressions 1 and 2 in Table 5 are consistent, regardless of whether the authors use OLS (Regression 1) or 2SLS (Regression 2) estimators. From all audit committee variables, only ACM is found to be significant and positively related to non-audit service fees (at the 1% (0.142; t-stat = 2.49) level in regression 1 and at the 10% (0.143; t-stat = 1.80) level in regression 2). This finding is not as predicted in hypothesis 4<sub>b</sub> and suggests that firms with audit committees that meet more frequently are more likely to purchase higher levels of non-audit services. Four of the control variables, namely, LEV, SIZE, ACQ and BUSSEG, are found to be significantly related to non-audit service fees and have the predicted coefficient signs (Regression 1). SIZE and ACQ are positively associated with non-audit service fees in both regressions (Regression 1 and Regression 2), suggesting that large firms that undertake acquisition activities demand the purchase of higher levels of non-audit services to deal with their system complexities and wider range of activities (Abbott et al., 2003). LEV is negatively associated with non-audit fees as higher leverage will result in higher agency costs and auditors will reduce their provision of non-audit services due to reputational capital concerns (Habib and Islam, 2007).

#### *4.2.3 Additional tests*

A number of additional tests are conducted in this section to check the robustness of the results. First, Zaman et al. (2011) suggested that larger companies with effective audit committees are more likely to buy non-audit services because of their complicated activities. As such, we split the sample into large and small firms to examine whether the effectiveness of audit committees in determining auditor remuneration would be different in these two samples. The results presented in regressions 3 and 4 (Tables 4 and 5) reveal that ACM is positively related to audit fees in both samples. However, ACS is only significant in larger firms and ACI is only significant in smaller ones. This suggests that ACS is more likely to impact audit fees of larger firms. Audit fees of smaller firms, however, are more likely to be determined by audit committee independent directors. The results of non-audit fees reveal that ACS is the only characteristic which helps in determining the level of non-audit service fees for larger firms, however, non-audit fees of smaller firms are more likely to be determined by ACM (Regression 4).

**Table 5** OLS with robust standard errors (Dep.: Nat. Log. of Non-Audit Fees)

<i>Variables</i>	<i>Reg. 1(OLS)</i>	<i>Reg. 2(2SLS)</i>	<i>Reg. 3(Large Firms)</i>	<i>Reg. 4(Small Firms)</i>
	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>
<i>INERCEPT</i>	<b>3.662***</b> (3.09)	<b>3.898*</b> (1.75)	<b>3.319*</b> (1.69)	-7.570 (-0.65)
<i>lnASF</i>		-0.0110 (-0.03)		
<i>ACM</i>	<b>0.142***</b> (2.49)	<b>0.143*</b> (1.80)	0.119 (1.55)	<b>0.236**</b> (2.38)
<i>ACS</i>	0.151 (1.59)	0.152 (1.18)	<b>0.279***</b> (2.79)	0.067 (0.41)
<i>ACI</i>	-0.043 (-0.10)	-0.038 (-0.07)	0.739 (0.77)	-0.601 (-1.12)
<i>ACRX</i>	0.058 (0.19)	0.057 (0.16)	0.133 (0.32)	-0.495 (-1.13)
<i>BLOCK</i>	-0.310 (-0.58)	-0.311 (-0.55)	0.588 (0.86)	<b>-1.473*</b> (-1.78)
<i>LEV</i>	<b>-1.480*</b> (-1.89)	<b>-1.490**</b> (-2.00)	-1.234 (-1.05)	-1.703* (-1.46)
<i>SIZE</i>	<b>0.557***</b> (6.60)	<b>0.563**</b> (2.10)	<b>0.516***</b> (4.56)	<b>0.585***</b> (3.42)
<i>LOSS</i>	-0.550 (-1.46)	<b>-0.552**</b> (-2.01)	-0.233 (-0.47)	-0.992 (-1.57)
<i>ACQ</i>	<b>0.654***</b> (2.59)	<b>0.656***</b> (2.74)	<b>0.671**</b> (2.00)	0.560 (1.59)
<i>BUSSEG</i>	<b>0.088**</b> (2.14)	0.088 (1.28)	0.058 (1.23)	0.109 (1.48)
<i>O&amp;G</i>	-0.288 (-0.74)	-0.293 (-0.48)	-0.539 (-1.29)	12.10 (1.05)
<i>BMAT</i>	-0.719 (-1.56)	-0.725 (-1.17)	-0.826 (-1.51)	11.38 (0.98)
<i>INDST</i>	-0.211 (-0.63)	-0.211 (-0.42)	0.0137 (0.03)	11.45 (0.99)
<i>CGOD</i>	-0.103 (-0.24)	-0.108 (-0.19)	-0.255 (-0.54)	11.64 (1.01)
<i>HCAR</i>			-0.515 (-0.81)	12.23 (1.06)
<i>CSEV</i>	-0.501 (-1.37)	-0.506 (-0.94)	<b>-0.761**</b> (-2.07)	11.61 (1.00)

**Table 5** OLS with robust standard errors (Dep.: Nat. Log. of Non-Audit Fees) (continued)

<i>Variables</i>	<i>Reg. 1(OLS)</i>	<i>Reg. 2(2SLS)</i>	<i>Reg. 3(Large Firms)</i>	<i>Reg. 4(Small Firms)</i>
	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>
<i>TELECOM</i>	-1.205 (-0.97)	-1.211 (-1.37)	-0.453 (-0.72)	
<i>TECH</i>	-0.459 (-0.80)	-0.459 (-0.75)		11.21 (0.97)
<i>2008</i>	0.190 (0.83)			0.101 (0.27)
<i>2009</i>	-0.0579 (-0.24)	-0.248 (-1.07)	-0.407 (-1.31)	0.126 (0.34)
<i>2010</i>		-0.191 (-0.79)	-0.288 (-0.98)	
<i>Residuals</i>	<b>0.733***</b> <b>(5.00)</b>		<b>0.886***</b> <b>(4.24)</b>	<b>0.442**</b> <b>(2.13)</b>
R-square	25.80%	21.95%	27.69%	19.83%
Observations	619	619	310	309

\*, \*\*, \*\*\*significant at the 1%, 5%, and 10% level or better, respectively.

ACM is the number of audit committee meetings held in a given year; ACS is the total number of audit committee members; ACI is the percentage of independent directors in the audit committee; ACRX is the percentage of audit committee directors with relevant financial expertise on the audit committee; BLOCK is the percentage ownership of block-holders who hold at least 5 % or more of outstanding common shares and are unaffiliated with management; LEV is total long-term debt to total assets; SIZE is the natural logarithm of total assets at yearend; LOSS is an indicator variable with 1 if a firm incurred losses in either one or both of the previous two years; ACQ is an indicator variable with a value of 1 if a firm made an acquisition during the year; BUSSEG is the number of a firm business segments; O&G is oil and gas industry; BMAT is basic materials industry; INDST is industrials industry; CGOD is consumer goods industry; HCAR is healthcare industry; CSEV is consumer services industry; TELECOM is telecommunications industry; TECH is technology industry.

Second, given that the audit committee is the sub-committee of the board responsible for approving auditor remuneration, this study focuses on examining audit committees, rather than board of directors. However, Carcello et al. (2002) examined both sets of audit committee and board variables separately and combined and find that “audit committee variables provide no incremental explanatory power when the board variables are included in the model” (p.379). As such, the authors control for the board variables and find qualitatively the same results for audit committee variables with audit fees (Table 6, Panel A, Regression 3) and non-audit fees (Table 6, Panel B, Regression 3). Moreover, all board variables are found to be significantly related to audit fees except CEODUAL. Consistent with Boo and Sharma (2008), NEDs are positively related to audit fees suggesting that the latter are more likely to increase in the presence of boards comprising of a higher proportion of non-executive directors (Carcello et al., 2002, Abbott et al., 2003). BM, however, is negatively associated with audit fees at the 5% level (-0.0261; t-

stat = -2.36) suggesting that the more frequent board meetings are, the less audit efforts will be exerted by the auditors and therefore the lower audit fees.

**Table 6** Additional tests

Variables	Panel A: Dependent LnASF			Panel B: Dependent LnNASF		
	Reg. 1	Reg. 2	Reg. 3	Reg. 1	Reg. 2	Reg. 3
	(Cntrl Var)	(>2008)	(Board Var)	(Cntrl Var)	(>2008)	(Board Var)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
INERCEPT	<b>4.054***</b> (8.43)	<b>3.457***</b> (6.02)	<b>4.222***</b> (10.71)	<b>3.898**</b> (2.99)	2.450 (0.93)	<b>3.874***</b> (3.06)
ACM	<b>0.092***</b> (4.54)	<b>0.096***</b> (4.12)	<b>0.101***</b> (4.52)	<b>0.145***</b> (2.49)	<b>0.171**</b> (2.41)	<b>0.157***</b> (2.70)
ACS	<b>0.102***</b> (3.16)	<b>0.079**</b> (1.98)	<b>0.081**</b> (2.41)	0.149 (1.53)	0.091 (0.73)	<b>0.167*</b> (1.71)
ACI	<b>0.381**</b> (2.30)	<b>0.472**</b> (2.37)	<b>0.313*</b> (1.83)	-0.042 (-0.09)	-0.283 (-0.52)	-0.116 (-0.25)
ACRX	-0.059 (-0.53)	-0.081 (-0.61)	-0.094 (-0.84)	0.059 (0.20)	-0.021 (-0.05)	0.200 (0.63)
NEDs			<b>0.993***</b> (3.33)			-0.407 (-0.51)
CEODUAL			-0.076 (-0.38)			-1.275 (-1.18)
BM			<b>-0.026**</b> (-2.36)			-0.014 (-0.35)
BLOCK	-0.121 (-0.60)	-0.100 (-0.40)	-0.282 (-1.39)	-0.334 (-0.62)	-0.315 (-0.41)	-0.144 (-0.27)
LEV	<b>-1.030***</b> (-5.09)	<b>-0.875***</b> (-3.76)	<b>-0.907***</b> (-4.83)	<b>-1.595**</b> (-2.03)	-1.386 (-1.43)	<b>-1.529**</b> (-1.95)
SIZE	<b>0.586***</b> (19.54)	<b>0.602***</b> (19.70)	<b>0.559***</b> (21.37)	<b>0.541***</b> (6.15)	<b>0.550***</b> (5.27)	<b>0.563***</b> (6.15)
LOSS	-0.123 (-1.38)	<b>-0.197**</b> (-2.03)	-0.128 (-1.42)	-0.570 (-1.46)	-0.348 (-0.88)	-0.579 (-1.53)
ACQ	<b>0.209***</b> (3.09)	<b>0.223**</b> (2.87)	<b>0.206**</b> (2.97)	<b>0.636***</b> (2.51)	<b>0.857***</b> (2.84)	<b>0.679***</b> (2.71)
BUSSEG	<b>0.088***</b> (5.75)	<b>0.100***</b> (5.55)	<b>0.101***</b> (6.63)	<b>0.085**</b> (2.04)	0.069 (1.45)	<b>0.074*</b> (1.88)
RESTR	<b>0.220***</b> (3.64)			0.131 (0.60)		
ROA	<b>0.007*</b> (1.67)			-0.003 (-0.35)		
RECINV	-0.300 (-1.39)			-0.124 (-0.19)		

**Table 6** Additional tests (continued)

<i>Variables</i>	<i>Panel A: Dependent LnASF</i>			<i>Panel B: Dependent LnNASF</i>		
	<i>Reg. 1</i>	<i>Reg. 2</i>	<i>Reg. 3</i>	<i>Reg. 1</i>	<i>Reg. 2</i>	<i>Reg. 3</i>
	<i>(Cntrl Var)</i>	<i>(&gt;2008)</i>	<i>(Board Var)</i>	<i>(Cntrl Var)</i>	<i>(&gt;2008)</i>	<i>(Board Var)</i>
	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>	<i>(t-stat)</i>
<i>O&amp;G</i>	<b>-0.301**</b> (-2.34)	0.0514 (0.19)	<b>-0.296**</b> (-2.17)	-0.226 (-0.56)	1.269 (0.80)	-0.345 (-0.87)
<i>BMAT</i>	<b>-0.459***</b> (-2.91)	-0.133 (-0.47)	<b>-0.531***</b> (-3.31)	-0.660 (-1.36)	0.563 (0.35)	-0.661 (-1.41)
<i>INDST</i>	0.107 (1.13)	<b>0.531**</b> (2.09)	0.124 (1.25)	-0.183 (-0.54)	1.280 (0.81)	-0.189 (-0.55)
<i>CGOD</i>	<b>-0.339***</b> (-2.77)	0.101 (0.38)	<b>-0.336***</b> (-2.60)	-0.0711 (-0.17)	1.583 (1.01)	-0.0763 (-0.18)
<i>HCAR</i>		0.455 (1.71)			1.422 (0.87)	
<i>CSEV</i>	<b>-0.397***</b> (-4.06)	0.0253 (0.10)	<b>-0.351***</b> (-3.41)	-0.475 (-1.27)	1.070 (0.67)	-0.452 (-1.23)
<i>TELECOM</i>	<b>-0.392**</b> (-2.00)		-0.385 (-1.52)	-1.121 (-0.90)		-0.854 (-0.62)
<i>TECH</i>	0.0192 (0.13)	0.426 (1.52)	0.0751 (0.52)	-0.454 (-0.80)	1.215 (0.73)	-0.462 (-0.79)
<i>2008</i>	0.111 (1.52)		<b>0.123*</b> (1.72)	0.190 (0.82)		0.173 (0.75)
<i>2009</i>	0.051 (0.76)	0.042 (0.62)	0.054 (0.80)	-0.078 (-0.33)	-0.053 (-0.22)	-0.061 (-0.26)
<i>2010</i>						
<i>Residuals</i>				<b>0.749***</b> (4.98)	<b>0.930***</b> (4.75)	<b>0.755***</b> (4.98)
R-square	71.94%	73.48%	72.05%	25.92%	25.45%	26.53%
Observations	619	413	619	619	413	619

\*\*\*, \*\*, \*significant at the 1%, 5%, and 10% level or better, respectively.

ACM is the number of audit committee meetings held in a given year; ACS is the total number of audit committee members; ACI is the percentage of independent directors in the audit committee; ACRX is the percentage of audit committee directors with relevant financial expertise on the audit committee; BLOCK is the percentage ownership of blockholders who hold at least 5 % or more of outstanding common shares and are unaffiliated with management; LEV is total long-term debt to total assets; SIZE is the natural logarithm of total assets at yearend; LOSS is an indicator variable with 1 if a firm incurred losses in either one or both of the previous two years; ACQ is an indicator variable with a value of 1 if a firm made an acquisition during the year; BUSSEG is the number of a firm business segments; O&G is oil and gas industry; BMAT is basic materials industry; INDST is industrials industry; CGOD is consumer goods industry; HCAR is healthcare industry; CSEV is consumer services industry; TELECOM is telecommunications industry; TECH is technology industry.



Third, the authors introduce additional control variables into the audit fees and non-audit fees models to check whether the results are robust to the inclusion of other factors that are found to be influential determinants of audit fees and non-audit service fees. The control variables are restructuring (RESTR), return on assets (ROA) and the sum of receivables and inventory divided by total assets (RECINV). RESTR is an indicator variable with a value of one if a firm undertakes operational restructuring during the year and is included to account for the complexity in a firm that would require additional audit efforts and the purchase of more non-audit services. In addition to the LOSS variable, ROA is another control variable that is used to account for the client profitability. RECINV is used to control for the inherent risk in an engagement where specialised audit procedures are needed (Hay et al., 2006b; Simunic, 1980). Table 6 reports the results of both audit fees (Panel A, Regression 1) and non-audit service fees (Panel B, Regression 1) models. The results are qualitatively similar and echo those obtained from the main models.

Finally, this study uses a three-year sample period from 2008 to 2010. Given that the year 2008 is considered as the year of the financial crisis, and that firm risk is one of the influential determinants of audit pricing, the authors exclude the year 2008 from the sample to check the robustness of the results. Table 6 reports the findings of audit fees (Panel A, Regression 2) and non-audit fees (Panel B, Regression 2) models which are qualitatively similar to those reported from the original models in Tables 4 and 5 respectively.

## **5 Conclusion**

Inspired by UK regulatory concerns about the integrity of corporate financial reporting and external audit processes in the post-financial crisis period from 2008 to 2010, and the transparency enhancement roles that audit committees could play in this regard, the authors examine how effective audit committees were in determining proper levels of audit fees and non-audit service fees after the financial crisis.

Mainly, the results support the agency perspective argument and suggest that large audit committees that are independent and meet more frequently undertake an effective monitoring role that results in extensive audit testing and thus higher audit fees. However, audit committee members with relevant financial experience are not found to be associated with either of audit fees or non-audit fees. Contrary to the authors' prediction in hypothesis 4b, ACM is found to be positively related to non-audit fees indicating that greater levels of non-audit services are purchased by firms whose audit committees meet more frequently. This suggests that during economic downturns, firms sought the purchase of more non-audit services to help them deal with financial problems and difficulties. The results are robust to the exclusion of the year of the financial crisis (2008) from the sample, as well as the inclusion of board characteristics and additional control variables.

Overall, the results of this study have implications for both researchers and policy makers. As far as researchers are concerned, this study provides evidence that ACM is positively related to audit fees and non-audit fees, suggesting that the simultaneous provision of audit and non-audit services by the incumbent auditor would facilitate a beneficial knowledge spill-over between the two services resulting in a better quality of audit (Simunic, 1984, Knechel et al., 2012). Moreover, board meetings are found to be

negatively related to audit fees, suggesting that an increase in the activity of the board will lead to less audit effort from the external auditor resulting in lower audit fees. These findings are inconsistent with the agency perspective, and imply that the effectiveness of internal governance mechanisms may depend “upon organisational and environmental circumstances” (Van Essen et al., 2013), while more than one theoretical perspective is needed to capture “the greater complexity” in organisations (Eisenhardt, 1989).

The results could be also of potential interest to policy makers in several ways. First, audit committees are found to be principal determinants of audit fees after the 2008 financial crisis, this support the recommendations of regulatory bodies to strengthen the oversight roles of audit committees. Moreover, the positive and significant association between non-audit fees and ACM do not support the prohibition of non-audit services recommendations by UK regulatory bodies (e.g., HCTC, 2009, HOL, 2011), this suggests that the joint provision of audit services and non-audit services rather enhance the quality of external audit than impair it. As such, this finding supports other UK empirical evidence (e.g., Zaman et al., 2011), and implies that policy makers should take into consideration that the simultaneous provision of audit and non-audit services is not likely to be subject to financial failures. Finally, ACFX is not associated with either audit fees or non-audit fees. This finding is inconsistent with the UK Corporate Governance Code recommendation that audit committees should comprise at least one member with relevant financial expertise, and implies that audit committee members with only relevant financial experience may not be effective in determining audit fees and non-audit fees during financial crisis periods. It might be that committee members with accounting qualifications and audit experience could be considered to deal with the accounting complexities and sophistications inherent in financial reporting (Defond et al., 2005).

Despite the potential contributions that this paper is providing to the literature, there are three caveats that should be taken into consideration. First, in an attempt to examine the impact of audit committee effectiveness on auditor remuneration following the 2008 financial crisis, we limited the sample period to the years 2008–2010. Despite that we did not extend the sample period to the year 2021 due to the manual collection of some governance variables, the motivation of the study and the results are still valid and relevant given the continuous financial failures of high-profile UK firms and the relevant concerns about the effectiveness of audit committees in the external audit process. Second, regarding the data tested in this research, the authors use a main sample of UK FTSE 350 firms listed during the period 2008 and 2010. The UK institutional, governance, and accounting systems are different from those of the US in which the vast majority of similar research has been conducted. Also, FTSE 350 firms are subject to a higher level of governance recommendations to comply with, in relation to smaller listed firms, and to greater focus and monitoring from regulatory bodies. Having said that, the findings of this paper should be cautiously generalised, taking into consideration the context and the period of the study as well as the nature of the examined firms. Third, similar to the vast majority of relevant extant studies and given the empirical nature of this paper, the authors examine the effectiveness audit committees through their individual characteristics. As such, implications of the findings do not provide an explanation of how the audit committee and the board operate and behave especially in the presence of unhealthy financial conditions.

Future research should take into considerations these limitations in addition to exploring holistic theoretical approaches which could better explain organisational complexities and their environmental circumstances. This paper provides implications

that the simultaneous provision of audit services and non-audit services is not likely to harm auditors' independence. Future research should further confirm the validity of these implications by examining the impact of corporate governance mechanisms on the economic bonding between external auditors and their clients. One of the interesting economic bonding proxies used in the literature considers the percentage of a client's audit fees relative to auditor audit revenues per office.

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## Notes

<sup>1</sup>Low-balling occurs when 'audit firms cut their audit fees in order to get a foot in the door for more lucrative non-audit work' (ACCA, 2011 p.6).

<sup>2</sup>Independent directors are keener than executives to reduce moral hazard agency conflicts which may emerge from the simultaneous provision of audit services and non-audit services.

<sup>3</sup>It is worth noting that all of the FTSE 350 firms examined in our sample are audited by one of the Big Four audit firms.

<sup>4</sup>The UK Corporate Governance Code recommends that audit committees be comprised of at least three independent directors, meet at least three times a year and include at least one member with recent and relevant financial expertise.

<sup>5</sup>The VIF multicollinearity test is further tested and none of the variables has a VIF of more than 10, indicating the nonexistence of any multicollinearity problem (Gujarati, 2003).

<sup>6</sup>Standard errors are adjusted for heteroskedasticity by using the robust standard errors option.

<sup>7</sup>Following Zaman et al. (2011), the separation between small and large firms is based on the median of total assets as a surrogate for size.

<sup>8</sup>ACS is also found to be positively related to non-audit fees at the 10% level.

<sup>9</sup>ACX is not found in corporate governance databases and it was collected manually from firms' annual reports.

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